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1983 GYPSY MOTH DETECTION SURVEY

SOUTH DAKOTA
DEPARTMENT OF AGRICULTURE
DIVISION OF FORESTRY

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ABSTRACT

In 1984 several public organizations in South Dakota combined efforts to conduct a statewide Gypsy moth detection survey. Approximately 500 pheromone sticky traps were placed throughout the state during June. Specific attention was focused on two areas near Custer, South Dakota. During 1982 introduced egg masses were found in one of these areas and a lone male moth was trapped in the other. During 1983 eight males were caught in two traps in the egg mass area. This spot is now considered an active infestation.

Moths were also trapped in one other area of the state. Two males were caught in one trap in a public park in Madison. This find is being treated as a potential second infestation. No moths were found anywhere in the rest of the state.

INTRODUCTION

The Gypsy moth (Lymantria dispar L.) is a voracious feeder on over 500 different species of host plants (4). Although oak is the favored host, older caterpillars can survive on almost anything. They do very well on a wide variety of species common to South Dakota such as: aspen; chokecherry; cottonwood; maple; elms; and, numerous pines and spruces (3). Generally, small caterpillars are somewhat restricted in their host range, but this expands rapidly as the caterpillars grow (3). South Dakota has enough susceptible hosts throughout most of the state to support this destructive pest.

The Gypsy moth was introduced into this country in 1869 in Massachusetts. It has continued to spread since then. For the most part, the main infestation is still confined to the northeast section of our country. However, there are numerous isolated small outbreaks throughout the nation.

Because of the ways this insect spreads long distances these small outbreaks remain fairly isolated. The insect itself only moves slightly over a mile or so each year under its own power. The female moth cannot fly even though it has wings, making her relatively stationary. The farthest natural movement occurs when very young caterpillars are carried by the wind (1). That distance is restricted to only a few miles. Long distance spread, on the other hand,

depends almost entirely on man and his activities. Because the female doesn't particularly care where she lays her eggs, they are often found on cars, trucks, boat trailers or recreational vehicles, and even lawn furniture and garden equipment (3). Often these are then moved to another part of the country where the eggs hatch and start a new infestation.

New infestations generally stay small for several years. Most often they go unnoticed. At these stages isolated infestations are controllable and can even be eradicated. Without immediate control measures when the environment, food supply and other conditions are right, the population expands rapidly. Once that happens eradication and even suppression usually become difficult and very expensive. Even so, the public usually demands that it be carried out as these small caterpillars can become so numerous they become real pests.

Prior to 1982 several state officials became concerned that this pest might enter the state undetected. In order to detect the moth before it could establish large populations a detection trapping program (5) was established. Many state and federal organizations are cooperating with this detection survey. By several strokes of luck, we found the first serious establishment of this pest in South Dakota the first year of the survey right after the pests were transported to Custer (2). Typically, the pest came into the state on a boat trailer and several pieces of outdoor equipment. Finding it this early should make it easier to completely eradicate the infestation before it can become firmly established and do serious damage.

The purpose of this years survey was twofold. It will continue the statewide early detection system to spot outbreaks before they can get a good start; and it will determine whether or not there is an actual continuing infestation at Custer.

METHODS

The 1983 survey was conducted by several local, state and federal agencies including: the South Dakota Department of Agriculture - Division of Regulation, Division of Forestry and Division of Conservation; the South Dakota Department of Game, Fish and Parks - Parks Division and Custer State Park; individual county conservation districts; the Black Hills National Forest; and numerous city forestry and parks departments.

The number of traps each individual agency received for detection purposes varied. On an average they received; conservation districts - 3 each; Division of Forestry district offices - 5 each; state parks - 2 each; Custer State Park - 4; Black Hills National Forest - 8; and cooperating cities - 2 to 5 each. Overall, the state was covered with over 500 traps.

Those counties from which final trap reports were received are shown in Figure 1. Final reports were not received from all counties, however the cooperators feel confident that the state was adequately surveyed.

Specific trapping sites and methods followed those outlined by Schwalbe (5) and by the "Plant Protection and Quarantine Gypsy Moth Manual" of the Animal and Plant Health Inspection Service (APHIS).^{*} APHIS also supplied the +, disparlure pheromones and traps.

^{*}APHIS is the federal agency responsible for the gypsy moth quarantine and isolated infestation eradication programs.

Two traps were placed where egg masses had been inadvertently brought into Custer the previous year. These were put up with a dual purpose. They would tell us if there is now an active infestation in the area. If so, it would also indicate that there were egg masses which escaped detection and destruction the previous year and that the eggs can survive a South Dakota winter.

RESULTS AND DISCUSSION

Eight male moths were trapped in two traps in the Custer area and two males were caught in one trap in a Madison city park (Figure 1). No others were trapped throughout the remainder of the state.

The catches near Custer prove that these insects can survive South Dakota winters and that we do have an infestation. After the moths were positively identified by the Smithsonian Institution, an onsite inspection of the area was conducted. Four new egg masses were found on or very near the ground. This means the eggs will be covered with snow and be insulated from South Dakota's cold winters. Because of this, we cannot rely on winter conditions to kill the pest. This infestation is still small and can be easily eradicated.

An eradication program is currently being planned for this area. The first attempt will be to saturate the infestation site with a number of traps. The purpose is two-fold; it will allow the high pheromone concentrations to disrupt mating. Secondly, it will trap any males which hatch. The effectiveness of this method is questionable, but it seems to have worked in two other instances (1). The biggest drawback of this method is that it may take several years to complete. There is always a chance that caterpillars will escape to the surrounding area. The positive aspect of this method is that no pesticides will have to be used in a populated area.

The status of moths trapped in the Madison area is still unknown. When only one or two moths are caught they are often considered "hitchhikers". Male moths and pupae often get trapped in moving vehicles and may travel long distances before escaping. They often escape in parks, rest areas, and campgrounds where tourists stop. Consequently, we concentrate trapping activities in these areas. Often "hitchhiking" males will become trapped giving a confusing picture as to whether or not an actual infestation exists. Further work then needs to be conducted to determine the area's true status. Fortunately, "hitchhiking" male moths are not a threat to starting an infestation.

The next step in the detection process for Madison is to follow up with an egg mass search. Only if egg masses or other life stages are found is the area considered infested. This search has not yet been carried out due to snow cover. It is planned for this coming spring. The area will also be saturated with a specific pattern of traps to delineate the size and area of any infestation. Information from this will determine eradication treatments.

RECOMMENDATIONS

1. Place a heavy concentration of traps in the Custer infestation to delineate the infested area and attempt to eradicate the pest. Further, try to get the landowners to selectively spray any trees in which they find gypsy moth caterpillars.
2. Conduct an egg mass search in the Madison area.
3. Regardless of the outcome of #2, initiate a grid system trapping program in and around Madison during 1984.
4. Continue the statewide detection trapping program. The state has been fortunate to keep on top of the pest through this program.

LITERATURE CITED

1. Doane, Charles C. and Michael L. McManus, editors, 1981. The Gypsy Moth: Research Toward Integrated Pest Management, Expanded Gypsy Moth Research and Development Program, Tech. Bull. 1584, U.S. Dept. Agric., 757p.
2. Dorset, Richard D., 1982. South Dakota Forest Pest Survey, No. 82-1, SD Div. of Forestry, Pierre, SD, 5p.
3. Houston, David R., 1979. Gypsy Moth Handbook: Classifying Forest Susceptibility to Gypsy Moth Defoliation, Comb. For. Pest Res. and Devel. Prog., Agric. Hndbk. No. 542, US Dept. Agric., Washington, DC, 23p.
4. McManus, M.L., D.R. Houston, and W.E. Wallner, 1979. Gypsy Moth Handbook: The Homeowner and the Gypsy Moth: Guidelines for Control, Comb. For. Pest Res. and Devel. Prog., Home and Garden Bull. No. 227, U.S. Dept. Agric., Washington, DC, 34p.
5. Schwalbe, Charles P., 1979. Gypsy Moth Handbook: Using Pheromone Traps to Detect and Evaluate Populations of the Gypsy Moth, Comb. For. Pest Res. and Devel. Prog., Agric. Handbk No. 544, U.S. Dept. Agric., Washington, D.C., 11p.

TRAP LOCATIONS OF CONFIRMED MALE GYPSY MOTHS

Known Counties in
Trapping Program

Infestations
Confirmed

2 Moths Trapped
(status unknown)

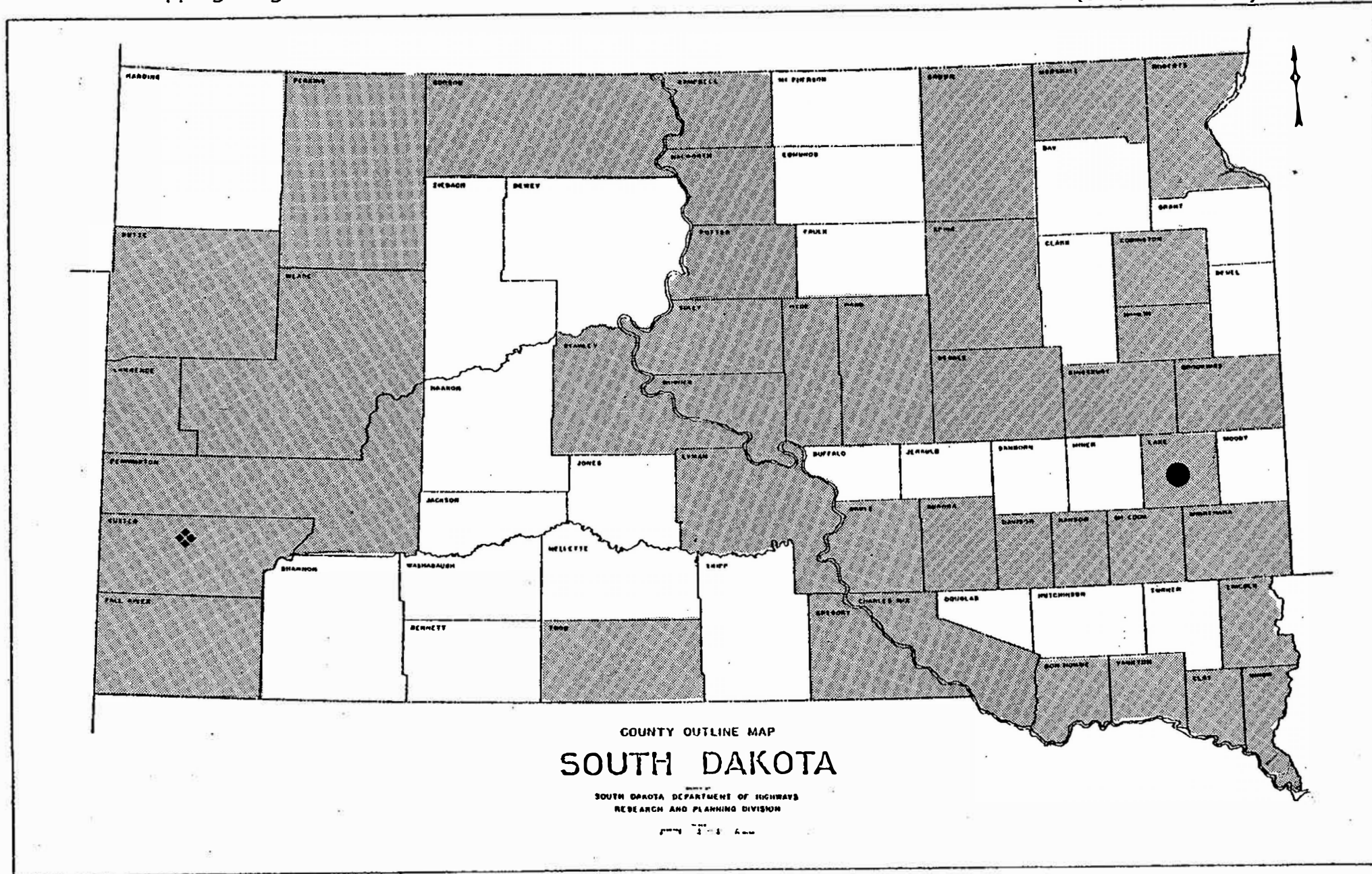


FIGURE 1